E-Government: Latest Trend and Future Perspective The Iraq Case

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***Abstract*-**
In the past few years, e-government has been a topic of much interest among people who are interested in the advent of Web 2.0 technologies.
E-government presents a new and innovative approach to addressing traditional problems of government services by utilizing the Internet and WWW. It can create significant benefits for citizens, businesses, and governments around the world.
For more than a decade, e-government applications have made major effects in the world. With unprecedented breadth in the field of information technology, the world moved from the industrial age into the information age.
Many countries around the world already are moving to institute e-government as central in public sector operations.
However, many innovations that could improve government efficiency and effectiveness and be of benefit to citizens and businesses have been hindered by legal, technical, organizational and other obstacles.
This paper outlines concepts related to e-government, some of the goals and benefits embedded in the practice of e-government and most crucial issues involved. It also examines some of the challenges being encountered, main elements in e-government system and the current state of e-government implementation across the world.
The paper also sheds light on e-government in Iraq, as Iraq now lies behind most of the developing countries (aside from developed countries) in terms of e-government implementation. Factors, such as political situations, absence of appropriate legislation, deficient technology infrastructure slowed Iraq in its development of the e-government services. Then, the future of e-government is examined from two perspectives: developed and developing countries. The study is finalized with conclusions and future work.

Keywords: E-Government; E-Governance; E-Government Development Index; E-Participation; M-Government; Developing Countries; Developed Countries; Arab Countries; Iraq; ICT

I. INTRODUCTION

The growing adoption of e-government by different nations worldwide is a testimony to its role as an effective tool for public service delivery. Various national, provincial and local government e-government initiatives have been implemented. But what is it exactly? What are the benefits of e-government? What can governments do to make it work? What is the current state of e-government in Iraq? What is the future of e-government? These questions, and others, will be answered throughout this paper.

E-government is much more than building a web site or putting in computers for information access. Rather, it is about transforming the relationship between government and the public and transforming government service delivery through the use of technology.

This paper does not attempt to perform a comprehensive review on e-government and related notions. Rather, it tries to shed light on some of the basic concepts and trace the current state and the future of e-government in developing and developed countries, with a special attention to the case of Iraq due to the lack of studies that address e-government implementation in Iraq.

1.1 Background

E-government (also called electronic government, digital government, online government or one-stop government), in its narrow definition, describes the use of the Internet technologies in reforming government-citizen interactions and related political relationships. However, in its broader definition, it implies the use of information and communication technology (ICT, satellite communication and geographical information systems), in addition to the use of Internet, the World Wide Web and cellular telephone to provide better services to citizens and businesses [12].

The previous definition implies the following four key domains, which reflect the functions of government itself [8]:

- E-services: the electronic delivery of government information, programs, and services over the Internet.
- E-democracy: the use of electronic communications to increase citizen participation in the public decision-making process.
- E-commerce: the electronic exchange of money for goods and services.
- E-management: the use of information technology to improve the management of government.

While e-government refers to what is happening within government organization, another concept (with a nearby meaning) is e-governance. E-governance, on the other hand, refers to the whole system involved in managing a society. This system includes activities related to the government, companies, organizations, and citizens. In general, the term 'e-governance' is used by political scientists, while 'e-government' is usually used within information systems research context [12].

The field of e-government can be traced back to late 1990's, as it was born out of the Internet boom along with other disciplines such as e-commerce and e-learning. The initial concept of e-government was for mostly as the mirror image of e-commerce in the public sector [11], and between 1994 and 1999, many local governments around the world already had an official website [20]. In 2000, there were 168 national governments that had their own websites [35].

The field has a number of conferences that are regularly held, such as the International Conference on e-Government (ICEG), the eGovernment and eServices Conference (GCC), the International Conference on Information Technology, E-Government and Applications (ICITEA), the European Conference on eGovernment (ECEG) and the International Conference on EBusiness and EGovernment (ICEBEG). The aim of these conferences is to bring together academic scientists, researchers and scholars all over the world to share their experiences and research results and discuss the practical challenges encountered and the solutions suggested.

In addition to conferences, journals (such as The Electronic Journal of e-Government EJEG, the International Journal of Electronic Government Research IJEGR and the International Journal of eBusiness and eGovernment Studies IJEBEG), research studies, and books aim to publish perspectives on the implementation and management of e-government.

1.2 Sectors of E-Government

E-government encompasses a wide range of activities and actors. However, four distinct sectors can be identified. These include government-to-government, government-to-business, government-to-citizen and government-to-employee [23]:

- Government-to-Government (G2G): G2G e-government involves sharing data and conducting electronic exchanges between governmental actors.
- Government-to-Business (G2B): The G2B sector includes both the sale of surplus government goods to the public, as well as the procurement of goods and services.
- Government-to-Citizen (G2C): G2C initiatives are designed to facilitate citizen interaction with government, such as renewing licenses and certifications, paying taxes, and applying for benefits.
- Government – to - employee (G2E): information and internal services that provide easy access to government information and systems in order to enable the staff give a better performance.

Within each of these types of interaction domains, four kinds of activities take place [30]:

- Pushing information over the Internet, such as regulatory services, general holidays, public hearing schedules, notifications, etc.

- Two-way communications: In this model, users can engage in dialogue with agencies and post problems, comments, or requests to the agency.
- Conducting transactions such as lodging tax returns, applying for services and grants.
- Governance processes: such as enabling the citizen transition from passive information access to active citizen participation.

1.3 Advantages of E-Government

The use of e-government insures a successful implementation of the following goals [22]:

- *Rebuild government - customer relationship*: as governments can use the new technology to treat citizens as individuals and provide personalized services.
- *Create a more participative form of government*: e-government can lead to achieve direct democracy.
- *Foster economic development*: governments can help businesses improve their performance and assist them to use online tools.
- *Bridge the digital divide*: by giving access to new technology to the less fortunate people in society.
- *Achieve lifelong learning*: which can be accomplished through e-learning services.
- *Deliver electronic and integrated public services*: citizens and businesses can complete all processes from a single point of access.

1.4 Challenges to E-Government

The planning and implementation of e-government will have to focus on finding methods to address varied challenges. These challenges can be considered predefined conditions for a successful implementation of e-government [34]:

- *Creation of ICT Infrastructure*: it is necessary to support all aspects of ICT, including computers, the Internet, the cellular telephone, satellite communication and so on. Education also would be a critical aspect of promoting ICT for the sake of e-government successful adoption.
- *Human Capital*: ICT development and e-government requires a blend of technical, commercial, administrative and management knowledge. For example, the lack of trained and qualified persons in developing countries can be attributed to the out-migration of qualified persons to other countries.
- *Strategy*: it is necessary to establish a proper strategy that considers for the local environment and context. Strategy must be long-range and comprehensive. This necessitates appropriate policy, regulatory and legal frameworks and flexibility.
- *A Supportive Policy Environment*: policy also must address legal issues such as data and information protection, e-commerce, censorship, freedom of speech, as well as international issues such as cross-border regulations, copyright issues and intellectual property.
- *Change Management*: Change management can be an issue in the public sector, particularly in the setting of established bureaucracies and administrative and political processes. Addressing this challenge requires the provision of catalysts for organizations and individuals for better participation.
  For example, in a country like USA, the biggest concerns for e-government managers in the early days were not technical issues, but rather policy issues (such as coordination and collaboration between agency leaders) and communication to better understand inter-relationships between the various e-government projects [17].
- *Partnerships and Collaboration*: Cooperation and collaboration between the public and private sectors would be needed to ensure the availability of

resources, skills and capabilities which the public sector may lack.

- *Law contradiction*: Another concern is how to make e-government functions so that it does not conflict with other local laws [17].

1.5 Issues Emerging When Implementing E-Government

While the adoption of e-government carries many advantages, it also leads to a number of issues [34]:

- *Privacy and Security*: Security generally refers to the protection of information systems assets and controlling access to the information itself while privacy generally refers to respecting the right to have information attributed to an individual be treated with an appropriate level of protection. Adopting clear and effective measures for data security and protection of privacy is a critical and indispensable job. Such measures would prevent unauthorized parties gaining access to secure and private information.
- *Information Management*: With the e-government emergence, management of content becomes an important duty. This management is necessary to ensure that information and knowledge resources and skills are managed properly and effectively.
- *Citizen Participation*: when the government adopts a project like e-government, e-participation by citizens should also be considered (e-participation to be explained later). This will help strengthening the government and improving the relevance and quality of government processes and services.
- *Intra- Government Communication*: Integration of government units toward integration of processes and service provision should be an objective of e-government.
- *Digital Divide*: it is the gap that emerges between the technology haves and have-nots as a consequence to implementing e-government. To avoid creating a digital divide, expanded dialogue and new patterns of cooperation among public, private and civil society organizations are needed.

1.6 The Government-Citizen Relationship

There are a number of considerations that govern the relationship between the government and citizens [34]:

- Government often is seen as insufficient in meeting citizen needs. However; the citizens have no substitute dealing with the government.
- The quality of decision-making process in the public sector can be improved through continuous interaction between government and its citizens.
- Through active participation in government and political discussions, citizens, can provide feedback that serves their interests.
- E-government is one way to refine the shape of this relationship. This could be done when the government begins to take a more customer-oriented view, by considering citizens as clients, and adopting values of consumer satisfaction.
- Closed or insular government lies in the opposite end and cannot meet citizen needs.

Citizens are seen very interested in e-government, but they prefer a better attention to their security and privacy concerns before investing in more service development. They also want e-government to help them become better informed, and they want it to make government more accountable by making processes and decisions more open and transparent [8].

II. E-GOVERNMENT MAIN ELEMENTS

2.1 Information & Communication Technology

Information and communication technology (ICT), describes the use of telecommunication devices (telephone lines and wireless signals),

personal computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information [32].

There is great potential for ICT and e-government in the socioeconomic development processes of developing countries. ICT and e-government is one central way in which governments can enhance public administration of the public sector and strengthen ways in which government is achieved. It represents the introduction of a great wave of technological innovations.

The benefit of using ICT capabilities can be summarized as follows [34]:

- ICT offers powerful tools that can be used to overcome some of the fundamental barriers for basic development, for sustained economic and social development, and for entering global systems.
- The positive relationship between ICT investment and GDP (Gross Domestic Product) growth shows the importance of investment in ICT for development in both the public and commercial sectors.
- Countries that show slowness to embrace and apply ICT tools will face significant relative disadvantages that could widen gaps in economic status and economic competitiveness.

2.2 Development Models of E-Government

E-government development is studied by building models of its stages. The literature offers a number of development models. It can be described in terms of an evolutionary process, starting with a basic web presence and moving up through a number of levels.

It has been found that most countries reach Level 2, which is easier to achieve. However fewer countries reach Level 3, which is harder because establishing real transaction services or "vertical integration" requires substantial intervention in the back-office systems and negotiation across different organizations and jurisdictions [14].

These levels typically consist of 4 stages:

1) *Basic Web Presence*: This phase is characterized by the existence and presence on the Internet. During this phase, the Internet sites are rather static in nature and are only meant to provide general information. Information published online can include laws, regulations, policies, budgets, judicial opinions, official publications and reports, forms, executive decisions, and a wide range of government advice and information on matters such as health and agriculture. It can also include government directories, organizational structures, and contact information.

2) *Interaction*: This phase is characterized by speedier interactions using electronic channels for some part of a service or transaction. In most instances, this stage enables the public to access critical information online, but requires a visit to a government office in order to complete the task. Citizens and businesses may be able to comment on proposed regulations or file corruption complaints via e-mails, generate downloadable forms, submit forms and information, and search various specialized databases. Information and content is regularly updated. Interact tools include e-mail, web-based forms, chat rooms, web forums, bulletin boards, list-serves, and online question and answer (Q&A) sessions with government officials.

3) *Transaction*: The "Transaction" phase of e-Government involves a mutual exchange of information (and sometimes funds) between government and citizens or businesses through step-by-step online self-service processes. Citizens are able to file tax returns, obtain visas, passports, birth and death records, licenses, and permits, pay parking fines and utility bills, and apply for government jobs.

4) *Integration or Transformation*: The fourth phase is characterized by redefined relationships between government,

citizens, businesses, communities and employees delivering seamless experiences and rich levels of engagement derived from new connectivity, interoperations and business models for service, and policy design and development.

Another model, proposed in 2002 by the United Nations and the American Society for Public Administration, suggests that e-government development model consists of five stages: The 'emerging' stage: in which an official online government presence is formed. The 'enhanced' stage: in which the number of government sites increases in number and becomes more dynamic. The 'interactive' stage: in which users can download materials from the website and interact with officials through the Web. The 'transactional' stage: where users have the ability to make online transactions. The 'seamless' stage: which makes the integration of electronic services across government agencies possible [36].

2.3 The Conversion to the E-Based Model

Government is actually a dynamic mixture of goals, structures and functions. The transformation towards the e-based model tries to ensure a better service delivery through the use of new and emerging technologies. No government wants to be left behind in the world race toward improving the government's performance through a better delivery of information and services [22].

Many governments in the world have showed interest in maintaining traditional paper-based and labor-intensive systems, for different reasons such as social, economic, political and others, independent from concern for effective and efficient government.

In the traditional model of public service delivery, procedures are long and time consuming. For example, a business wishing to obtain a license often must complete a number of application forms, visit a number of different offices, and devote large amounts of time to the process. Consequences include lost productivity, significant costs, and high degrees of dissatisfaction.

In contrast, converting information-based processes and services to digital and online materials reduces processing costs, inefficiencies, errors, and constraints to sharing, and saves much time. E-government activities offer around the clock information access from remote locations, reduced bureaucracy, faster and more convenient transactions, lower costs and improved quality of service.

Mainly, there are three constructs that are involved in the transformation process towards the e-based model, and these are the citizen, the business and the government:

- *Citizens*: citizens usually want a convenient and instant access to public services and get access to these services from any geographic location. Also, they will not accept with any limitation on how they get access to services.
- *Business*: the e-government model helps businesses become more competitive and instead of filling in a number of paper forms to get permits or licenses, they find it easier to fill in these forms online. E-government is a good opportunity for them to conduct online transactions and create new business chances.
- *Government*: it would be a good opportunity for the government to change the citizens' opinions of the government and the services that it offers and regain their confidence. It would be a good chance also to reduce employee time spent on non-customer activities.

A successful e-government structure should have the following characteristics [9]:

- *Comprehensive*: citizens should be completely able to do everything they want to do with their government through one e-government portal.
- *Integrated*: All e-government applications should be integrated with each other.
- *Ubiquitous*: Access to an e-government portal should be available to citizens from any Internet-capable connection.

- *Easy to Use*: E-government sites should be designed and operated so that all users can readily find the information they need.
- *Accessible*: The design and operation of e-government systems should consider the special needs of the disabled.
- *Secure*: E-government systems need to protect the confidentiality of data provided by citizens.
- *Private*: Data about citizen government transactions needs to be fiercely protected by the government.
- *Re-Engineered*: It is necessary to design a digital structure that creates a government-citizen interface that simplifies and streamlines each transaction.
- *Interoperable*: The e-government site is one that provides appropriate and up-to-date links to other e-government sites.
- *Be Developed to E-governance Systems*: E-government serves not only as a means of administration, but also as a primary tool of collective and democratic decision-making, and participation for society.

On the other hand, the failure of e-government, especially in developing countries, can be attributed to one or more of the following reasons [5]:

- Lack of training schemes and qualified staff.
- Lack of change management efforts.
- Lack of educating citizens about the value and benefits of E-government.
- High turnover rates of government IT.
- Lack of public sector skills.
- Large design-reality gaps as a result of using an off-the-shelf solution.
- The need of appropriate infrastructure.
- The large gap between the skilled leaders who can afford technology, and the unskillful poor who can't afford the same.

2.4 E-Government Website

The quality of the e-government website depends on the amount of content, its usefulness and how often it is updated, as well as navigability, usability, search capacity, accessibility, and download time. Websites designed with a focus on the user make it easier to find information. As a government aggregates content and services into portals, it becomes easier for users to find information from multiple websites hosted by different ministries. Advanced features on web portals can include disseminating content to cell phones and PDAs. This practice is known as mobile government or "m-government".

Some of the types of e-government website are as follows [14]:

- *National Entry Points*: National entry points or landing pages (sometimes called gateways or portals) aggregate and organize content and services, often with links to websites of individual ministries or programs. The goal of a portal is to efficiently guide users to the information and services they seek.
- *Citizen- or Business-Centric Portals*: portals designed around the needs of citizens or businesses. The goal of these portals is to provide "one-stop shopping" so that citizens and businesses no longer need to go to a number of separate ministries, bureaus, or departments to find information on a particular subject or complete a transaction.
- Ministry-level Websites: Many Ministries or departments create their own websites. However, as ministry-level websites proliferate and become more complex, they may interfere with the goal of providing user-centric access to information and services, unless there are detailed content and transaction links.
- *Provincial, Local, and Municipal Websites and Portals*: Provincial, local and municipal governments are also offering localized and specialized government services.

2.5 Financing

Financing e-government can pose a major challenge for developing countries, especially given the range of needs competing for funding. Accordingly, governments often utilize donor support to launch e-government initiatives, and they might explore a range of funding mechanisms in addition to established government ones [14]:

1. *Government Funding*: Governments are using a range of mechanisms for funding e-government projects. Primary mechanisms for funding include:
   - Central funding – appropriate for initiatives relating to general values (standards/interoperability, openness, transparency, democracy) and value-added services (e.g., security, identification, search).
   - Ministry-level financing through normal budget allocation processes – best for projects aimed at service process redesign and capacity building.
   - Budget guidelines or requirements – central government mandates to ministries and departments to allocate a certain percentage of their budgets to e-Government.
   - Budget offsets through cost saving brought on by greater efficiency – assuming that the computerization of manual processes can save money, it can free up resources that can be reallocated and used to fund additional e-government projects.
   - Governments can finance e-government projects by issuing bonds on either the domestic or international capital markets, with the interest on the bonds to be paid for by proceeds from the project or from general tax revenues.

2. *Donor Support*: For many developing countries, foreign assistance is an important source of funding for a range of development and institutional reform projects. Donors have in recent years increased their support for e-government projects.

3. *Private Sector Relationships*: Governments enter into many different kinds of contracts with private sector entities to provide various resources, assets, and services for an e-government program to include a range of sourcing arrangements including the outsourcing of services (e.g., community service access point, or IT help desk), and as a partner in the development and/or management of an e-government service or capability.

III. STATUS OF E-GOVERNMENT AROUND THE WORLD

3.1 The E-Government Index

The E-Government Index identifies and weighs the significance of the predefined conditions that enable a country to achieve a sustainable e-government environment. This is done by measuring the country’s official online presence, evaluating its telecommunications infrastructure and assessing its human development capacity. The results of the E-Government Index reflect the country’s economic, social and democratic level of development.

The importance of the E-Government Index is that it provides governments the opportunity to look deeply into their long-term strategy and the short-term policy for quick performance. The survey results are hoped to play a key role in enhancing the delivery of public services and enabling governments to respond to a wider range of challenges [4].

It has been noticed that countries where citizens enjoy the benefits of ample resources, privileged access to information and a better participatory relationship with their governments, rank well in the global e-government index [22].

There are three main widely used international e-government index from the early days of e-government until today [7]:

1. Accenture: is a global management consulting, technology and outsourcing company which has done yearly assessments of e-government efforts in more than 20 countries. The majority of these countries are located in Europe. Data collection is done by local Accenture employees in the countries surveyed.
2. Brown University has done annual e-government assessments since 2001. The Brown University surveys examine a broad range of public web sites.
3. The United Nations Department of Economic and Social Affairs (UNDESA) have assessed e-government readiness among its member nations since 2002.

3.2 The E-Government Readiness Index

Among the many indices that try to track the different aspects of e-governance in the world is the 'E-Government Readiness Index' which represents a more focused line of research within the broad spectrum of e-governance literature. It has been motivated by the need to develop a common measure to evaluate the readiness of various countries to make the transformation to e-governance [6].

The E-Government Readiness Index tries to assess the e-government readiness of the 192 member nations according to a quantitative composite index involving website assessment, telecommunication infrastructure, and human resource endowment.

It has been found that many nations have put in place e-government initiatives and information and communication technologies applications for the people to better enhance public sector services and streamline governance systems to support sustainable development.

Four key metrics have been used to induce the E-Government Readiness Index value to measure the nation's ability to meet the requirements of offering e-government services. These metrics are: Online Service Index[1], Telecommunication Infrastructure Index[2], E-Participation[3] Index and Human Capital Index[4]. They collectively represent measurements of a nation's readiness in terms of telecommunication infrastructure, maturity of e-services, participation of citizens in decision making and human resource availability.

According to the survey on E-Government conducted by the United Nations in 2012 [26], the regional averages of e-government development show that Europe comes first with (0.7188), Americas (0.5403), Asia (0.5403), Oceania (0.4240) and finally Africa with (0.2780).

Korea is the world leader country with (0.9283) on the e-government development index, followed by the Netherlands (0.9125), the United Kingdom (0.8960) Denmark (0.8889), United States (0.8687) then comes Canada, France, Norway, Singapore, Sweden etc.

As per the UN report, these countries have achieved maturity in the transactional stage of e-government. For example The Republic of Korea has consolidated its position in offering transactional e-services and has achieved transformation towards citizen-centric e-government.

As Arab countries, the first five countries in 2012 are the United Arab Emirates (0.7344), Bahrain (0.6946), Saudi Arabia (0.6658), Tunisia (0.4833) and Egypt (0.4611).

The e-participation index shows that the first five positions were occupied by Netherlands (1.0000), Republic of Korea (1.0000), Kazakhstan (0.9747), Singapore (0.9747) and the United Kingdom (0.9211).

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[1] The online service index consists of stage 1, 2, 3 and 4 which represent the level or stage of development [10].

[2] The telecommunication infrastructure index consist of Internet users per 100 inhabitants component, main fixed phone lines per 100 inhabitants component, mobile subscribers per 100 inhabitants component, fixed Internet subscriptions per 100 inhabitants component and fixed broadband per 100 inhabitants component.

[3] E-participation can be defined as the use of information and communication technologies to broaden and deepen political participation by enabling citizens to connect with one another and with their elected representatives [31].

[4] The human capital index consists of the adult literacy component and the enrollment component.

IV. E-GOVERNMENT IMPLEMENTATION IN IRAQ

4.1 Milestones in e-government project implementation in Iraq

From 2003 until today, e-government project in Iraq has gone through a number of important events. These important events can be summarized as follows:

- In 2004, the United Nations called its members to help the Iraqi government build its own e-government [3].
- In 2004, the Italian Ministry of Innovation and technology and the Iraqi Ministry of Science of Technology signed a Memorandum of Understanding (MOU) to provide the necessary financial and technical help for Iraq to build its own e-government [3].
- The United States Agency for International Development (USAID) and the Iraqi Ministry of Science and Technology made an agreement to develop the e-government project in Iraq from 2007 to 2010 [3].
- Both the Ministry of Science and Technology, and the Ministry of Communication started their cooperation on establishing the communication infrastructure necessary for the e-government implementation project in 2004. In 2010, that communication infrastructure was ready [20].
- However, the e-government project in Iraq has not met its goals yet due to a number of reasons [3].

4.2 The Legal Environment of E-Governance Project in Iraq

Due to the close connection between e-government and e-governance, and based on the approach that e-government is a part of e-governance, we take a glance on the legal environment that surrounds the e-governance project in Iraq.

Sunil Abraham has conducted a study on the Iraqi law that has direct consequences for information societies from the perspective of e-governance [2]. In his study, he spotted on the following points:

1. Iraq has signed a number of international understandings, such as the International Covenant on Economic, Social and Cultural Rights and the International Covenant on Civil and Political Rights in 1969 and ratified it in 1971.
2. Iraq and the UNDP have developed a Government Interoperability Framework (GIF) and National Enterprise Architecture (NEA) to serve as the Open Standards Policy for the Iraqi government. The GIF and NEA were developed during the course of two meetings of senior government officials representing a majority of all the ministries and departments and other independent commissions at the federal and provincial level. The GIF/NEA was approved by the Executive and has been published in the official gazette.
3. The enterprise architecture section of the NEA/GIF deals with the following aspect of Iraqi e-governance: project management, Iraqi development management system, project management at the ministry level, project management at the provincial level, financial management, electronic procurement, geographic information system, archive management system and complaints management.
4. There were concerns about how far the e-governance projects in the Iraqi government are in full satisfaction with the GIF/NEA. These concerns are as follows:

   - The GIG/NEA already lists WCAG 2.0 as a key open standard for e-governance. However, there is no clear mandate that all e-governance websites that are built for the citizens should be in compliance with this standard. The WCAG 2.0 standard ensures the electronic accessibility for all citizens, including the disabled, the aged, those who use legacy hardware and

software, those who are illiterate or neo-literate and those who don't have access to data connections and still depend on voice connectivity.
- The Iraqi government should enact laws that protect the individuals' right to privacy. This is included in trade, economics, intellectual property rights, and human rights sectors.
- Iraq has to amend the Patent law. Patent law is meant to strike a balance between the interests of five different stakeholders: The inventor, the entrepreneur, the government, consumers and the general public. Iraq's original patent law was enacted in 1970 and since then, it came under a number of amendments including those made by the Coalition Provisional Authority (CPA).
- The Iraqi copyright law is in urgent need for amendment. Across the world in many jurisdictions, copyright law is being amended to reflect changes in latest technologies. Iraq's original copyright law was enacted in 1971 and this law was amended also by the Coalition Provisional Authority (CPA).

Sunil recommends a number of non-technical suggestions that take forward the implementation of the Iraqi GIF/NEA [1]:
- Baseline Survey: conduct a baseline survey of all e-governance applications that have been already commissioned and those that are being currently developed so that the degree of compliance with the GIF can be determined.
- Interoperability Indicators: it would also be useful to track outcome indicators which will allow the government to measure - how much time, effort, resources and money was saved during the implementation of e-governance solutions.
- National Standards: There is an urgent need to develop semantic and data standards in areas where existing standards are not sufficient. Also, domain specific working groups should be established that can help develop standards in compliance with international best practices for transparency and participation.
- Shared repository of RFPs: One easy way to ensure greater compliance with the GIF and also increased momentum towards common infrastructure and common data/semantic standards is to share and reuse requests for proposals (RFPs) during the process of tendering for e-governance solutions.

4.3 Challenges to E-Government in Iraq

A number of challenges stand as barriers against a successful implementation of e-government in Iraq. These challenges can be summarized as follows:

1. The absence of an effective information and communication (ICT) infrastructure [20] and [3].
   According to the UNESCO, the country's ICT facilities and applications are very weak as most teachers have either very little or no ICT literacy at all, and thus are ill-suited to play their role to help create a new generation of ICT literate students. Also, the number of people owing personal computer is only 12% of the population [25].
   The access to the Internet in Iraq is still very slow and expensive. It is also unreliable because of the poor telephone communications and the inadequate power supply, as the total production of electricity in Iraq by 2010 was 48.96 billion kWh against 55.66 billion kWh of consumption, with 6.7 billion kWh being imported from neighboring countries [16].
   It was only in late 1999 that Internet access became available to the general public through limited Internet centers/cafes. The number of Internet users in Iraq was 800,000 in 2010 [24] or 325.000 users according to [15]. In June 2012, the number

jumped to 2.211.860. However, this constitutes only 7.1% of the total estimated population of Iraq in 2012, which is 31.129.225 [15]. The Iraqi government should ensure implying ICT lessons in college. The lessons should include the standard materials and international certificates as conditions before graduation from college [20].

2. Shortage in the legal structure [20] and [3].
3. Lack of qualified IT staffs, as many IT skilled people have migrated to other countries for better living chances. For example, 20% of the Iraqi ministries lack the necessary skilled IT staff and therefore, they still precede with their daily works in the traditional way [20] and [3].

   Infrastructure for IT services remains underdeveloped in most parts of the country, as IT access is limited and uneven, and education remains highly dependent on printed materials [27]. It is necessary to allocate an efficient portion from the Iraqi yearly budget for IT human resources training and establish a community of highly-qualified IT individuals to put and run technology projects in Iraq [20].
4. Lack in number of stakeholders[5] who are ready to invest in technology and support sectors [3].
5. Political, Ethnic & Sectarian dispersed loyalties: as many employees inside the official departments have opposing political, ethnic and sectarian loyalties, this in turn has bad effects on the performance of these departments, and consequently on the e-government project implementation in Iraq as a whole [3].
6. Security difficulties: Iraq, since 2003, has been experiencing a wave of violence that lead to the death of 172,907 civilians and combatants from March 2003 until December 2012 [28].

[5] Stakeholder is a person, group, organization, member or system who affects or can be affected by an organization's actions [33].

4.4 Facts about E-Government Project Implementation in Iraq

The E-Government Readiness Index report shows that Iraq is still in its early stages of e-government development, along with countries such as Afghanistan, Burundi, Mali, and Senegal. According to the report:

- Iraq comes in position 137 in 2012 with 0.3409 (however, it ranked in position 151 in 2008 with 0.2690) which points out to a tangible progress in its e-government implementation project.
- The e-participation index shows that Iraq shared the 28th position in the list (with 0.1053 in the index) with Albania, Gabon, Jordan, Saint Lucia, Saint Vincent and the Grenadines, Viet Nam and Ghana.
- The online service component's value is (0.2876).
- The telecommunication infrastructure component's value is (0.1201).
- The human capital component's value is (0.6151).

However, Iraq is one of the countries in the world that provide a statement 'follow us on Facebook or Twitter' within the official website.

V. THE FUTURE OF E-GOVERNMENT

What are the ways in which government can facilitate e-participation and e-democracy? How can the performance of more qualitative tasks of government be measured? What new forms of accountability fit the new models of networked government? What are good indicators to monitor the potential threat to privacy as a result of networked and intelligent government? What are the ways in which government can manage the overload of information as a result of 'ambient government' [18]? These and other questions are among the ones that occupy the minds of the people who are in charge of making the future plans of e-government.

Information and communication technology have helped to deliver more modern services for

citizens and businesses, drive public sector transformation and help governments prepare for future pressure on public administrations. The next generation of e-government will have to continue to improve public sector performance.

It is important to learn from the past and use the resulting experience as a platform to explore the future of e-government.

The main focus of most countries around the world will be to improve governments' understanding of citizens and businesses and their needs.

A number of promising technologies are assumed to contribute to the transformation of future e-governmental tasks and activities and which will be deployed on a large scale. These technologies include mobile devices (such as PDAs, computers, mobile phones), intelligent agents and robotics, sensor and language processing and semantic technologies, serious games, RFID and biometrics, ICT infrastructures (WiFi, WiMAX and broadband), web technologies and GRID [18].

There is a large gap between developed and developing countries when comes to the implementation of e-government. For example, in addition to the lack of sufficient capital to build up expensive national information infrastructures (on which e-government is based), developing countries also lack sufficient knowledge and skill to develop suitable and effective strategies for establishing and promoting e-government. The high cost of deploying an infrastructure capable of handling e-government applications is one reason. Also, many developing countries have been unable to fully implement their e-government policies, mainly because of some competing pressing social issues that need to be dealt with, such as: health, education and employment [11].

As a result to the variance in e-government development process between developed and developing countries, we will handle each case separately.

5.1 The Future of E-Government in Developed Countries

Future e-government in developed countries[6] should address the below challenges, which can be political, technological or socio-economic:

1. Political Challenges:
   - Since e-government has become a natural part of governments' toolboxes, governments are asking how this tool can be used to support and enhance broader economic development [21].
   - Future e-government needs to fundamentally change governmental operations, institutional arrangements and culture and go beyond mere public service and public sector modernization. Also, it needs to ensure cooperation and coordination at all levels of government and with new stakeholders and new intermediaries and work to ensure interoperability at both the organizational and technological level. It is, as well, important to address the potential risks of an ambient, all-knowing government, particularly to ensure data protection rights of citizens and businesses. It would be necessary to ensure univocal political commitment and strong leadership with an impact on every level of government [18].
   - The challenges of the digital divide are still present in many countries [21].
   - New models for public-private partnerships and other networked organizational forms. Given the diversity of players involved in delivering government services, effective e-government often requires coalitions of partners both within government and between government and the private and nonprofit sectors [8].

[6] A developed country is a term used to describe a highly developed economy and advanced technological infrastructure relative to other less developed nations. Among developed countries are United States, France, Italy, japan and Spain [29].

2. Technological Challenges:
   - Ensure technological interoperability and standardization and put new information architectures that should be flexible and open in order to be sufficiently user-centered and dynamic, and work to reduce the dependency on information and communication infrastructures and related services. It is also important to have a stronger investment in technologies that create smart ways of cooperating and sharing or producing knowledge, and technologies which are designed to cope with potential information overload. Regarding networks, these must be accessible to all, both on the infrastructures and services level [18].
   - The issue of how to ensure sufficient competencies and skills to further develop public service delivery is a growing concern in many countries [21].

3. Socio-Economic Challenges:
   - The most important challenge will be to create the conditions for a truly citizen and user-centered public service provision. This requires A highly developed awareness of citizens' and businesses' needs, building trust through being transparent, responsive and accountable, removing the regulatory barriers for both citizens and businesses to be independent, self-organizing and self-regulating, ensuring that public services are equally accessible to all citizens and business and increasing the awareness of the potential benefits of e-government services [18].

5.2 The Future of E-Government in Developing Countries [7]

[7] The term 'developing countries' refers to the newly emerging and post-colonial economies of Africa, Asia, South America and Pacific regions. These countries are often associated with negative symptoms such as poverty, insecurity and instability [19].

Seventeen considerations must be addressed by the e-government initiatives of developing nations [13]:

1. *Infrastructure Development:* developing countries must include in their e-government strategies efforts to build out their ICT infrastructure and develop novel approaches to solve the problem of remote connectivity in order to support e-government efforts.

2. *Law and Public Policy*: Policy makers must ensure that laws are updated so that they recognize electronic documents and transactions.

3. *Digital Divide*: future e-government should put in mind to solve the problem of digital divide, which is a gap that evolves between people who have access to the Internet and those who do not have access. Those without access cannot learn essential computer skills. As a result, they cannot access information and cannot share in the benefits of e-government.

4. *E-literacy*: e-government future plans must address the problem of e-literacy related to groups of people who are unable to make use of information and communication technologies because they are not 'e-literate.'

5. *Accessibility*: Governments should serve all society members irrespective of their physical capabilities.

6. *Trust*: E-government projects must build trust within agencies, between agencies, across governments, and with businesses, Non-Governmental Organizations (NGOs) and citizens.

7. *Privacy*: As e-government services grow in scope and popularity, information databases will expand in size. Protecting the personal information stored on these databases is a vitally important issue.

8. *Security*: without security, citizens who may already be cautious of using technology may avoid the use of online services that ask for detailed personal information. This is a very crucial concern that the future e-government must consider.

9. *Transparency*: The lack of transparency prevents the public from actively participating in government and from raising questions or protesting unfair or ill-advised decisions. So, transparency should be an integral part of future e-government.

10. *Interoperability:* e-government planners should develop systems and record formats that work together and across departments.

11. *Records Management*: Better information management can help officials identify barriers to more efficient governments.

12. *Permanent Availability and Preservation*: Instead of warehouses filled with thousands of paper documents, governments can preserve and make readily accessible at any time vast amounts of information and statistics administered by a handful of technicians, clerks and librarians.

13. *Education and Marketing*: People, may be reluctant to try e-government services out of belief that online services will not meet their needs or due to lack of understanding of the technology. This problem can be solved by developing publicity and training campaigns that will engage the public about e-government initiatives, and conduct research to ensure that online services respond to actual needs and that the implementation suits the target audience.

14. *Public/Private Competition/Collaboration*: New rules may be needed to govern the relationship of the public and private sectors.

15. *Workforce Issues*: A well-trained and motivated workforce is critical to e-government success.

16. *Cost Structures*: In order to implement a successful e-government program, policymakers need to develop specific and reasonably attainable goals and understand what resources are available to achieve those goals.

17. *Benchmarking/Qualitative Methods*: Calculating the value and progress of e-government investments is a difficult but necessary step if governments want to maintain support for projects.

VI. CONCLUSIONS AND FUTURE WORK

The aim of this paper was to give an insight into the latest trend and future perspective of e-government with a specific attention to the case of Iraq.

This study contributes to e-government literature at the conceptual level by integrating the literature on e-government, from e-government definition, its advantages, issues and challenges and the government-citizen relationship, the current state of e-government implementation across the world. Then the study looks forward to anticipate the features of future e-government in both developed and developing countries.

Another key focus of the approach was to measure the performance of the Iraqi government during the first ten years of e-government life cycle in Iraq, as we have manifested some milestones that it went through, in addition to technical and legal issues and world stats obtained from United Nations E-Government Survey 2012. We have seen that Iraq lacks the necessary information and communication infrastructure and the legal framework that positively contribute to a better performance.

The findings of this study can promote public awareness about the possible benefits of e-

government. Doing so will have significant effect on users behavior toward the use and adoption of e-government services. For developing countries at the initial stage of e-government implementation, the findings can serve as a roadmap for skills acquisition at earlier stages of e-government and prepare for more advanced service provisioning. The study can also draw the attention of policy makers in Iraq to the possible issues that impede a successful of e-government in Iraq.

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